

## Advanced Spaceport Technology Working Group Sub-Function Definitions

ASTWG Function ID	ASTWG Function Title	ASTWG Function Description
A1	Receive and Accept Flight Element(s)	Functions that may be needed upon delivery of the flight element to the spaceport, such as from an external supplier or offsite depot (i.e., not routine arrival/recovery from space).
A2	Receive and Accept Payload Element(s)	Functions that may be needed upon delivery of the payload or cargo element to the spaceport, such as from an external supplier or offsite depot (i.e., not routine arrival/recovery from space).
B1	Assemble Flight Element(s)	Functions that may be needed to structurally assemble and mate components or segments of a flight element as received at the spaceport or launch area. Also transfers the assembled element to the flight vehicle integration point, if required.
B2	Assemble Payload Element(s)	Functions that may be needed at the spaceport to outfit and structurally assemble payload/cargo element(s).
C1	Service and Checkout Flight Element(s)	Functions that may be needed to prepare serviceable fluid commodities/systems, mechanical components requiring pre-flight adjustment and calibration, and electrical/electronic pre-flight preparations. Also includes functional verification through physical assembly.
C2	Service and Checkout Payload Element(s)	Functions that may be needed to prepare serviceable fluid commodities/systems, mechanical components requiring pre-flight adjustment and calibration, and electrical/electronic pre-flight preparations. Also includes functional verification through physical assembly.
D	Integrate Flight System and Payload	Functions that may be needed to structurally mate the flight elements and the payload/cargo element(s) into an integrated launch vehicle and mate to ground support systems. Also transfers the mated vehicle to the launch point, if required by the concept.
E	Execute Departure Operations	Functions that may be needed to provide final preparation, servicing, payload and/or crew ingress and launch the flight vehicle into space. Also includes the post-launch securing and refurbishment of the facilities and equipment at the launch point.
F	Control the Flight	Functions that may be needed to control mated vehicle flight, staged element flight to space and element return, if required. Does not include In-space transportation operations, i.e., "control the (space) mission"
G	Land/Recover Flight/Payload Element(s)	Functions that include the arrival or return of a flight element and/or cargo/payload element(s) during the course of a space flight. The arrival may be its trip back from space, perhaps a boost or assist stage returning, or a Return to Launch Site abort.
H1	Prepare Flight Element(s) for Turnaround or Disposal	Post-flight functions that may be needed to disassemble flight element segments for refurbishment/remanufacture (e.g. Hangar AF). Also includes planned removal of limited life items and major components that may require off-line pre-flight activities (eng
H2	Prepare Payload Element(s) for Turnaround or Disposal	Post-flight functions that may be needed to disassemble cargo/payload element(s) segments for restoration and refurbishment. Includes offload of experiments, removal of racks, breakdown of segments, etc.
I1	Restore / Remanufacture Flight Element(s)	Functions that may be needed to perform troubleshooting and repair and replacement of failed or worn parts of flight vehicle elements--Includes element remanufacturing and also includes off-manifest phased maintenance actions, such as vehicle or vehicle element
I2	Restore / Remanufacture Payload Element(s)	Functions that may be needed to perform payload/cargo element repair and reconfiguration for next flight
J	Restore/Reservice Ground Systems for Re-use	Functions that may be needed to restore ground
K	Traffic Control & Safety	Functions necessary to monitor and control outbound and inbound space traffic, ground element movements within a spaceport, and also protect the public and high value assets during ground processing and space flight operations
L	Spaceport Logistics	Functions that include shipping, receiving and repair flight line replaceable parts and materials after removal from the vehicle or its ground support equipment. Also includes logistics support for acquisition and distribution of consumables, propellants
M	Management of Spaceport Operations	Functions that may be necessary to support flight/ground systems processing. These may include a variety of host services needed to plan, manage and control the operation of the space transportation assets, as well as all elements of the supporting ground
N	Spaceport-Provided Support Services	Indirect services or functions that may be needed in support of on-vehicle operations. These may include a variety of host services needed to support flight production
O	Off-line Maintenance, Repair, and Overhaul	Functions required to perform offline periodic inspections; checkout and upgrade of flight vehicles and ground support systems and common spaceport infrastructure per a scheduled phased maintenance plan
P	Public and Community Support Services	Functions that may be needed to connect to and sustain the overall space transportation architecture and infrastructure